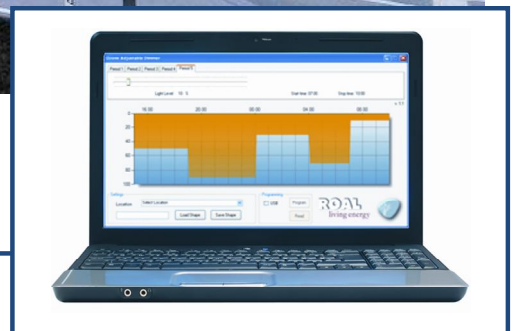


# Ozone "ToolSet" PC Software User Manual



## 1 Introduction

The high grade of intelligence and flexibility behind OZONE led driver and the “Living Energy” philosophy undertaken by ROAL, permitted us to develop the most innovative, flexible and “environmentally friendly” constant current LED driver.

All Ozone’s settings are settable by PC software following this user manual’s instructions or by Ozone programming tool (see “[AN3 Ozone Settings](#)”).

The aim of Ozone LED driver and Ozone “Toolset” PC Software is to meet the last technologies requirements in terms of flexibility, energy saving and light optimization. Using the Ozone’s programmable features, Lighting manufacturers are now free to personalize and make their products unique.

The “Adjustable dimmer” function permits a fast and easy custom outdoor lighting management planning up to five (5) dimming levels for a custom night-light profile, worldwide time zones synchronized. Focused on large areas lighting applications, like parking lots, shopping centers and urban spaces, it allows companies or public organizations to optimize their costs taking care of the environment.

Just turning the lighting fixture ON/OFF with a photocell on the AC input, the custom light profile shape will be self-synchronized to the real time zone, without any clock setting in the installation area.

The “Constant Light” function permits a guaranteed constant light flux along the entire product life-cycle, compensating the LED’s efficiency loss due to the product aging.

By USB connection, all customized settings can be transferred to the Ozone Programming Tool (see “[AN3 Ozone Settings](#)”) and then installed in the Ozone LED driver memory to be executed.

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## 2 Minimum PC Requirements and License agreement

**2.1** Operating System: Windows XP SP3 / Windows Vista / Windows 7  
Microsoft.NET Framework 4 Client Profile (x86 and x64)

**2.2** The Ozone "Toolset" PC Software is property of ROAL Electronics S.p.a. and it is managed and distributed only by ROAL.

- The Ozone "Toolset" PC Software can be installed in any number of computers.
- The Ozone "Toolset" program file can not be modified in any way.
- The Ozone "Toolset" can only be distributed or sold exclusively by ROAL Electronics S.p.a.

The Ozone "Toolset" PC Software and related documentation are provided without any kind of warranty. This software does not warrant that its functions or documentation will meet your requirements or that the software operation will be error-free or complete, or that defects in the software or documentation will be corrected.

Under any circumstances, including negligence, the Ozone "Toolset" PC Software and related documentation shall not be liable for any lost revenue or profits or any incidental, indirect, special, or consequential damages that result from the use or inability to use the Software or related documentation.

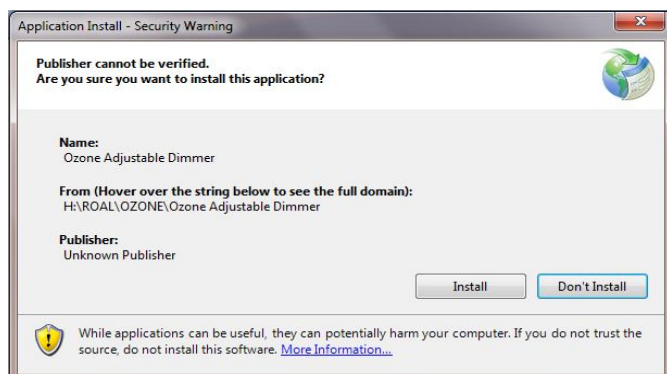
## 3 Software installation procedure

**3.1** Unzip "Ozone Toolset Vx\_x" Files.zip in your dedicated PC folder, two subfolders will be generated "Ozone Toolset" and "usb Driver".

**3.2** Enter the "Ozone Toolset" folder and launch the "Setup" file.

It is required to install the "Microsoft .NET Framework 4 Client Profile (x86 e x64)" in your PC system. If it is already installed in your computer, the procedure will automatically continue. If not, the installation procedure will directly download it from the Microsoft website (it could take some minutes and requires the system restart).

**3.3** Once the Microsoft .NET Framework 4 is installed, or skipped if already present, Click "install" in the following window.



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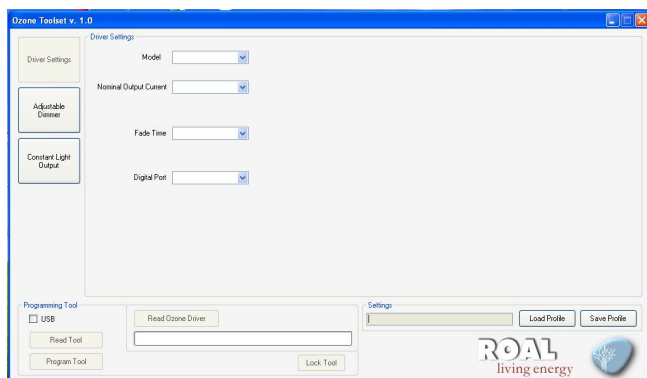
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**3.4** The Ozone “ToolSet” Software will be automatically launched at the end of the installation procedure.



A new dedicated desktop icon and Start menu folder will be created for direct software execution.

## 4 USB driver and Ozone Programming Tool installation procedure

- 4.1** Enter the “usb driver” folder (included in the “Ozone Toolset” Files.zip) and launch the Setup file
- 4.2** If you have User Account Control enabled (Windows Vista or Windows 7), click “Yes” or “Continue” in the window that will appear on the screen.
- 4.3** Wait until the installation procedure ends.
- 4.4** Connect the Ozone Programming Tool to the USB PC port and follow all the instructions to complete the driver setup.

## 5 Software update

- 5.1** Uninstall the old software version.  
Go to: Start→Control Panel→Programs and Features→ Ozone Toolset→Click “Uninstall/Change” button.
- 5.2** Install the new software version, following the procedure from section 3.

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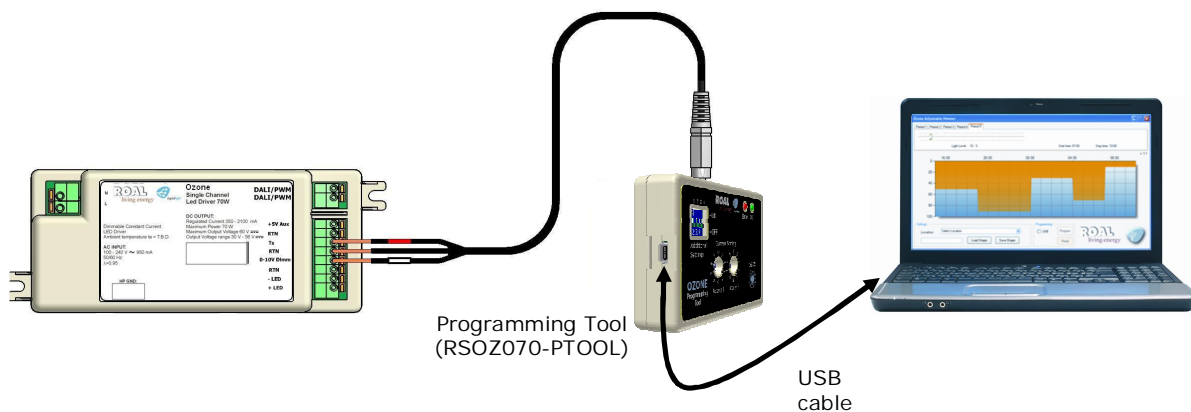
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## 6 Connections

To operate with Ozone "Toolset" Software, connect your PC to the Ozone programming tool by USB, then use the custom 3-wire cable (included in the programming tool package) to connect the programming tool to the Ozone LED driver.

The following connections will permit the user to:

- Transfer all settings from PC to the Programming Tool
- Transfer all settings from Programming Tool to Ozone
- Read all settings installed in the Programming Tool
- Read all settings installed in the Ozone LED driver



Once all settings are saved into the Ozone Programming Tool, Ozone "Toolset" Software is not necessary anymore, see "[AN3 Ozone Settings](#)" for details.

Push "Save" button (M) to transfer all settings from Programming Tool to Ozone LED driver.

The Programming Tool is a battery powered unit. It can be used as remote programmer that allows the user to set the Ozone LED Driver directly in the field or during the production process without PC.

### 6.1 Programming Tool operative modes

#### • Locked Mode:

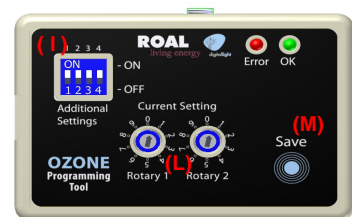
Dip (I) and rotary (L) switches are disabled.

Prog. Tool can be programmed only by Ozone "Toolset" PC software.  
Settings can't be manually modified.

#### • Unlocked Mode:

Dip (I) and rotary (L) switches are enabled (see "[AN3 Ozone Settings](#)").

Prog. Tool can't be programmed by Ozone "Toolset" software.  
Settings can be manually modified.



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## 7 LED Driver Settings

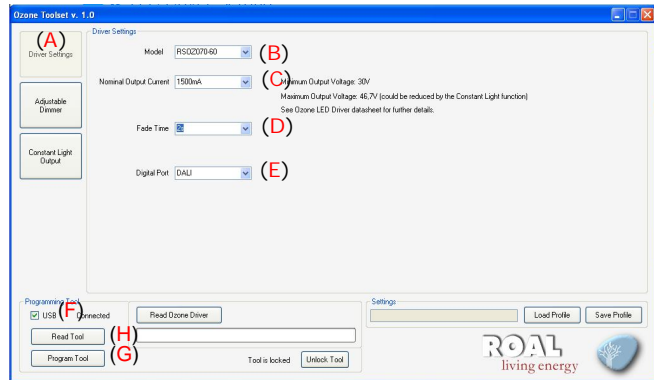
The LED Driver Settings window permits the user to set the driver's features.

Once Ozone's settings have been defined by Ozone "Toolset" Software, they have to be transferred to the programming tool in order to be installed in the Ozone LED driver and executed.

### 7.1 Driver Settings selection

- Select the "Driver Settings" window by pushing button (A)
- Select the driver model (B)
- Set the nominal output current\* (C)
- Set the fade time (D)
- Chose the digital port function (E)

\*High current settings may cause max output voltage level reduction due to power limitation (see Ozone's Data-sheet).



### 7.2 Programming Tool data transfer

- Connect Ozone Programming Tool to the PC USB port (see paragraph 6)
- Click the USB connection to establish the communication between the PC and the Programming Tool (F)
- Push the "Program Tool" button (G)  
A tool-locked/unlocked message will appear. The Programming Tool must be locked during the data transferring.
- All settings are installed in the programming tool now\*
- Pushing "Read Tool" button (H) all settings stored in the Programming tool will be read and displayed in the software windows.

\*Pushing (G), all enabled functions and settings will be stored in the programming tool.

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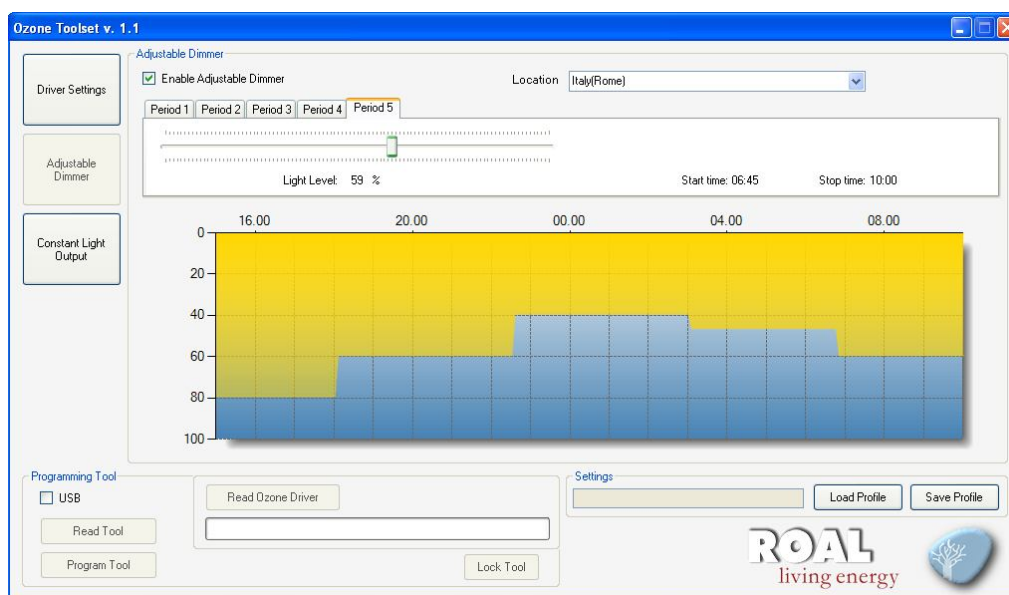
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## 8 Adjustable Dimmer Function

The Adjustable Dimmer function, useful in outdoor lighting applications, avoids the use of an external light dimmer to adjust the light flux during the entire night period with consequent energy saving. Through the Adjustable dimmer function, a custom night light profile can be set to optimize the light during the busiest hours and reducing the light (as well as power) during the low traffic hours.

A dimming profile is based on a 19 hour cycle from 15.00 hours (3pm) to 10.00 hours (10am). The software breaks this 19 hour cycle into 5 periods, each with a user settable start and stop time as well as light output as shown below.



The embedded firmware in the Ozone is self-updating to determine an estimated night time without the need for an internal real time clock. This means no battery is needed and therefore no field maintenance will be requested.

The AC input to the Ozone must be controlled by an external photocell that applies power to the driver when it is dark (sunset) and removes power when light (sunrise). This enables a self-synchronization to the real time zone based on the users location entered in the software.

For the first night, when the driver is turned on via the photocell, the dimming profile will be executed starting from period 1, 15.00 hours (3pm). It will continue to run through the cycle until the driver is turned off, via the photocell. The period of time that the driver is powered is called the working time. To estimate the actual start time (sunset) and synchronize the driver, the number of hours in the working time is calculated and divided by 2, then subtracted to the midnight point placed accordingly to the set location.

The driver uses the average working time over the prior 2 days to determine the actual starting time for the next cycle. When the driver is then powered on, it resumes the cycle at the correct time.

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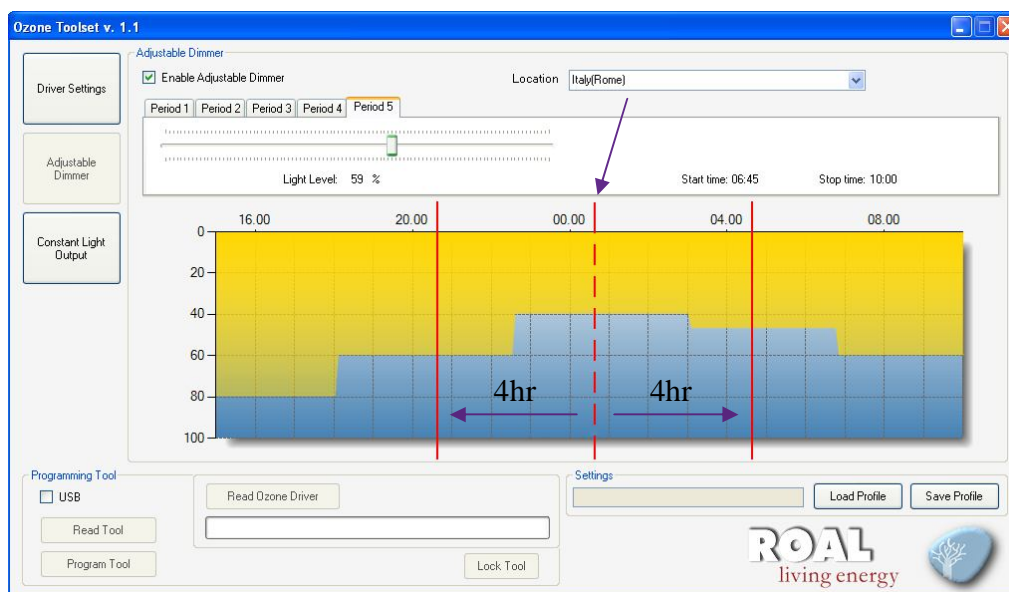
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**Example:** The location is set on Italy(Rome) and the midnight point is accordingly placed by the program. After the first night a working time of 8 hours is calculated. Starting from the second night the software will center the working time on the midnight point, therefore the real starting point (when the driver is turned on by the AC photocell) will be placed 4 hours before and the initial light profile will be the one set for that time. The end of the dimming operation (when the driver is turned off by the AC photocell) is similarly placed 4 hours after the midnight point.  
From the third night on, the working time will be calculated as the average of the two previous working times.



A working period longer than 19 hours is recognized as a 19 hour working time and the output of the driver will remain at the setting for period 5. A working period shorter than 3 hours is automatically discarded.

When the Adjustable Dimmer function is enabled, the 0-10V dimming signal will not affect the output current value.

The custom output current profile can be loaded or saved using the dedicated buttons. When a dimming profile is defined, it can be transferred in the Ozone Programming Tool and then installed in the Ozone LED driver memory to be executed.

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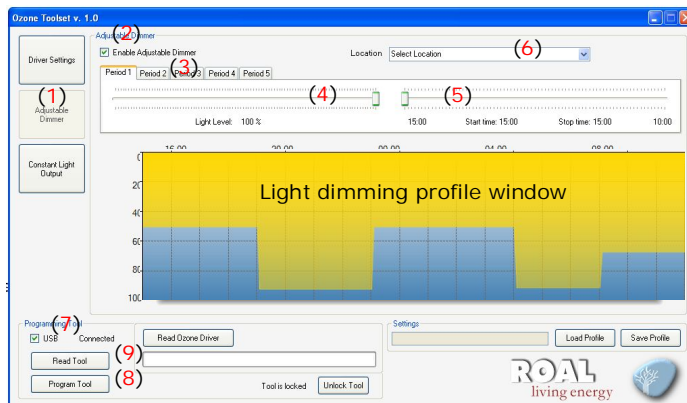
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## 8.1 Creating a new custom night light profile

- Select the Adjustable Dimmer window by pushing button (1)
- Click to Enable the function (2)
- Starting from "Period 1" up to "Period 5" (3), adjust all the light levels (between 10% and 100%)(4) and period durations (5) by using the two dedicated slide bars (the switch points cannot overlap)
- Select the location (6)
- Now you can transfer the new settings to the programming tool



## 8.2 Programming Tool data transfer (as explained in section 7.2)

- Click the USB connection to establish the communication between the PC and the Programming Tool (7)
- Push the "Program Tool" button (8). A tool-locked/unlocked message will appear. The Programming Tool must be locked during the data transferring
- All settings are installed in the programming tool now\*
- Pushing "Read Tool" button (9) all settings stored in the Programming tool will be read and displayed in the software windows

\*Pushing (8), all enabled functions and settings will be stored in the programming tool.

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## 9 Constant Light Output Function

The Constant Light Function, available starting from Ozone firmware revision 1.4, allows to define a current compensation along the time so that the Driver increases the output current to compensate the LEDs performance depreciation.

This function allows to meet stringent requirements at LED Lamp level, when a Constant Light along the Lamp life is required.

The Output current compensation depends on the LEDs characteristics and the actual working conditions (temperatures, power, etc.). By Ozone "Toolset" Software, the Constant Light function allows to create a full customizable output current profile along the time, in order to meet all LEDs characteristics and all possible working conditions.

If this function is not used, the LED Driver provides a Constant Current output along the time.

**Note:** If you use the Constant Light function, the 0-10V dimming can be used at the same time.

### 9.1 Creating a new "Constant light" profile

- Select the Constant light window by pushing button (9)
- Click Enable the function (10)
- The custom current profile along the time is defined by filling in the (Iout/I<sub>max</sub>)% and the timing values (11)
- The minimum I<sub>out</sub> is 80%I<sub>max</sub>, the max I<sub>out</sub> is 120%I<sub>max</sub>
- The timing scale can reach 127500hrs in 500hrs steps. Red figures indicate that they have not been defined yet (12)
- In case of replacement of a LED Driver it is possible to set the working hours of the LED Board. In case of a new LED board, the same space can be used to reset the value introducing zero hours (13)
- Now you can transfer the new I<sub>out</sub> profile to the programming tool (see 8.2 paragraph)



The Ozone's output current profile can contain information related to the Dynamic Dimmer function or to the Constant Light function or both of them, according to the information acquired through the dedicated software windows.

Use the "Read Ozone Driver" button (16) to read the driver settings directly from the Ozone's memory and visualize them by the Ozone "Toolset" Software windows.

All settings can be saved (14) and loaded (15) as .ozt PC file.

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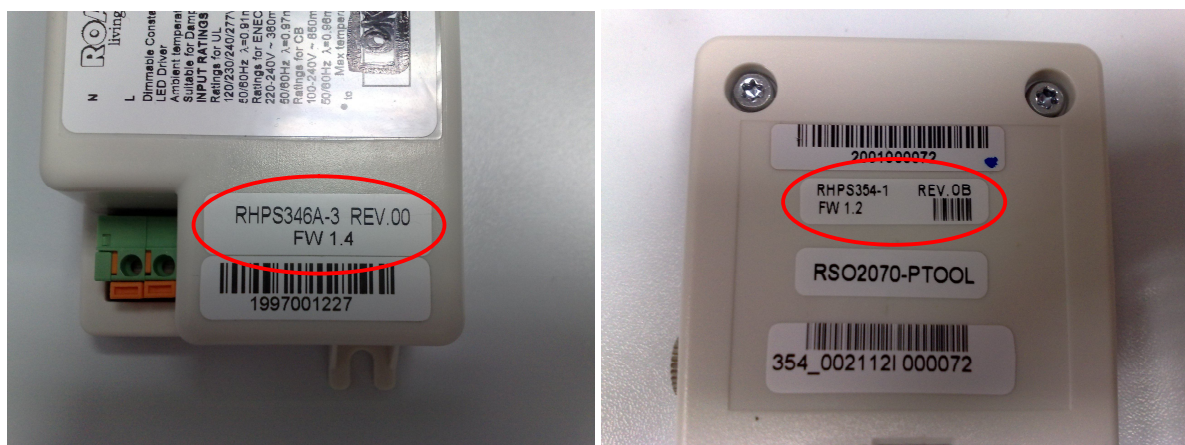
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## 10 Firmware and Software Revisions Overview

All the programmable features of the Ozone LED driver can be set according to the revision levels of the product's firmware, the Ozone Programming Tool and the Ozone PC Software.

The firmware revision of Ozone LED driver is indicated by a dedicated label placed above the input connector, while the revision of the Ozone Programming Tool is reported on the back side of the tool, as shown in the following pictures.



**Note:** No label is reported for Ozone Programming Tool at rev.1.1

The Constant Light feature has been introduced with the “[Ozone Toolset v1\\_0](#)” software version, and it's available for products at firmware level 1.4 or later and Ozone Programming Tool at level 1.2 or later.

For any firmware revision, the proper match with the Programming Tool and the Software revisions is reported in the following table.

Features available	Ozone firmware rev	Ozone Programming Tool rev	Ozone PC Software Pack
General hardware settings (PWM, DALI, current setpoint) & Adjustable Dimmer	1.3	1.1	“ <a href="#">Ozone Adjustable Dimmer v1_1</a> ”
		1.2 and later (only unlocked mode; Adjustable dimmer not available)	NO

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Features available	Ozone firmware rev	Ozone Programming Tool rev	Ozone PC Software Pack
General hardware settings (PWM, DALI, current setpoint) & Adjustable Dimmer & Constant Light	1.4 and later	1.1	"Ozone Adjustable Dimmer v1_1"
		1.2 and later	"Ozone Toolset v1_0" or "Ozone Toolset v1_1"

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